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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,501	09/20/2006	Mark Bischoff	3081.167WOUS	1712
24113 7590 06/22/2010 PATTERSON THUENTE CHRISTENSEN PEDERSEN, P.A. 4800 IDS CENTER 80 SOUTH 8TH STREET MINNEAPOLIS, MN 55402-2100				
EXAMINER NGUYEN, HUNG D				
ART UNIT		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/593,501

**Applicant(s)**

BISCHOFF ET AL.

**Examiner**

HUNG NGUYEN

**Art Unit**

3742

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 April 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 20-50 is/are pending in the application.
- 4a) Of the above claim(s) 31-38 and 45-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-30 and 39-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ ~~Notice of Informal Patent Application~~
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's arguments filed on 4/1/2010 have been fully considered and they are persuasive.

Applicant argued that claims 20 and 39 are generic in view of the amendments made to claim 31 and 45 in the response on 9/3/2009. The examiner agreed. Therefore, claims 20 and 39 are generic. However, claims 31, 37-38, 45, and 47-48 are not read on Species I (Polarization Modulator). Therefore, they are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention

Presently, claims 20-30 and 39-44 are currently under consideration.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. **Claims 20, 22, 24-26, 39 and 41-42 are rejected under 35 U.S.C. 102(a) as being anticipated by An et al. (US Pub. 2004/0124184) (newly cited).**

4. Regarding claim 20 and 39, An et al. discloses a machine device which machines a material by non-linear absorption of machining laser radiation, comprising: a laser radiation source 11 (Fig. 1) emitting said machining laser radiation 113 (Fig. 1) in a

beam having a cross section; - optics focusing 17 (Fig. 1) the machining laser radiation for non-linear absorption into or onto the material 111 (Fig. 1); and a polarization modulator 12 (Fig. 1) which causes the focused machining laser radiation to be linearly polarized, with a polarization direction varying across the beam cross-section (Par. 30-31).

5. Regarding claim 22, An et al. further discloses the polarization modulator 12 (Fig. 1) arranged between the laser radiation source 11 (Fig. 1) and the deflecting unit (16 (Fig. 1)).

6. Regarding claim 24, An et al. further discloses the polarization modulator 12 (Fig. 1) is arranged within the laser radiation source 11 (Fig. 1) such that the laser radiation source emits laser radiation having a polarization direction which varies across the beam cross- section (Par. 30-31).

7. Regarding claim 25, An et al. further discloses the polarization modulator 12 (Fig. 1) is adjustable, with respect to the variation of the polarization direction (Par. 30).

8. Regarding claim 26 An et al. further discloses a control unit 19 (Fig. 1) which modifies the variation of the polarization direction during operation of the machining device (Par. 31).

9. Regarding claim 41, An et al., further discloses adjusting the variation of the polarization direction during machining (Par. 32, 36).

10. Regarding claim 42, An et al., further discloses determining and controlling a quality parameter of machining, with the variation of the polarization directions being

used as the manipulated variable (Par. 31-32).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**12. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over An et al. (US Pub. 2004/0124184) in view of Wang et al. (US Pub. 2004/0196469) (newly cited) or Capin et al. (US Pub 2003/0078753) (previously cited).**

13. Regarding claim 23, An et al. discloses the polarization modulator 12 (Fig. 1) inhomogeneously modifies the polarization direction of the laser beam across the beam-cross section **except** the laser radiation source emits linearly polarized radiation. Wang et al. discloses the laser radiation source 20 (Fig. 1) emits linearly polarized radiation (Par. 18). Capin et al. also discloses laser radiation source 12 (Fig. 1) emits linearly polarized radiation (Par. 32). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in an et al., the laser radiation source emits linearly polarized radiation, as taught by Wang et al., for the purpose of being able to change the direction of linear polarization.

**14. Claims 27-30 is rejected under 35 U.S.C. 103(a) as being unpatentable over An et al. (US Pub. 2004/0124184) in view of Ngoi et al. (US Pat. 6,555,781) (cited by applicant).**

15. Regarding claim 27-30, An et al. discloses substantially all features of the claimed invention as set forth above **except** the laser radiation source emits pulsed laser radiation with a pulse duration of less than 10,000 fs; the laser radiation source emits pulsed laser radiation with a pulse duration of less than 500 fs; the laser radiation source operates at a pulse repetition frequency of more than 100 kHz; and the laser radiation source operates at a pulse repetition frequency of more than 450 kHz. Ngoi et al. discloses the laser radiation source emits pulsed laser radiation with a pulse duration of less than 10,000 fs; the laser radiation source emits pulsed laser radiation with a pulse duration of less than 500 fs; wherein the laser radiation source operates at a pulse repetition frequency of more than 100 kHz; and the laser radiation source operates at a pulse repetition frequency of more than, 450 kHz. (Col. 2, Lines 27-32). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in An et al., the laser radiation source emits pulsed laser radiation with a pulse duration of less than 10,000 fs; the laser radiation source emits pulsed laser radiation with a pulse duration of less than 500 fs; the laser radiation source operates at a pulse repetition frequency of more than 100 kHz; and the laser radiation source operates at a pulse repetition frequency of more than, 450 kHz., as taught by Ngoi et al., for the purpose of having ultra short pulsed laser machine.

**16. Claims 21, 40 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over An et al. (US Pub. 2004/0124184) in view of Swinger et al. (US Pat. 6,325,792) (previously cited).**

17. Regarding claim 21, An et al. discloses a deflecting unit 16 (Fig. 1) which modifies a spatial position of the focus in the material by controllable deflection of the laser beam **except** the deflection being controlled such that the focused machining laser radiation is shifted three dimensionally. Swinger et al. discloses the deflection being controlled such that the focused machining laser radiation is shifted three dimensionally. (Col. 25, Lines 63-67; Col. 27, Lines 60-63). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in An et al., the deflection being controlled such that the focused machining laser radiation is shifted three dimensionally, as taught by Swinger et al., for the purpose of verifying the two or more dimensional scan position of the laser beam.

18. Regarding claim 40, An et al. discloses substantially all features of the claimed invention as set forth above **except** shifting the position of the focus of the laser radiation at least two-dimensionally. Swinger et al. discloses the focus of the laser radiation at least two-dimensionally (Col. 25, Lines 63-67; Col. 27, Lines 60-63). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in An et al., the focus of the laser radiation at least two-dimensionally, as taught by Swinger et al., for the purpose of verifying the two-dimensional scan position of the laser beam.

19. Regarding claim 44, An et al. discloses substantially all features of the claimed invention as set forth above **except** forming cut surfaces in the material by areal sequential arrangement of optical breakthroughs generated by non-linear absorption, the cut surfaces being located in the material and have a cutting line extending, up to the surface of the material. Swinger et al. discloses forming cut surfaces in the material by areal sequential arrangement of optical breakthroughs generated by non-linear absorption, the cut surfaces being located in the material and have a cutting line extending, up to the surface of the material (Col. 25, Line 62 to Col. 26, Line 54). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in An et al., forming cut surfaces in the material by areal sequential arrangement of optical breakthroughs generated by non-linear absorption, the cut surfaces being located in the material and have a cutting line extending, up to the surface of the material, as taught by Swinger et al., for the purpose of removing a thin layer of unwanted material.

**20. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over An et al. (US Pub. 2004/0124184) in view of Haight et al. (US Pub. 2002/0125230) (previously cited).**

21. Regarding claim 43, An et al. discloses focusing the laser radiation in the vicinity of the surface of the material 15 (Fig. 1) to be machined **except** the distance of the focus from the surface of the material to be machined lying approximately in the range of the Rayleigh length of the radiation. Haight et al. discloses the distance of the focus from the surface of the material to be machined lying approximately in the range of the



Rayleigh length of the radiation (Par. 10 and 55). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in An et al., the distance of the focus from the surface of the material to be machined lying approximately in the range of the Rayleigh length of the radiation, as taught Haight et al., for the purpose of having efficiently energy of pulse laser light onto the material.

22. Applicant's arguments with respect to claims 20-30 and 39-44 have been considered but are moot in view of the new ground(s) of rejection.

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG NGUYEN whose telephone number is (571)270-7828. The examiner can normally be reached on Monday-Friday, 9M-6PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUNG NGUYEN/  
Examiner, Art Unit 3742  
6/16/2010

/TU B HOANG/

Supervisory Patent Examiner, Art Unit 3742